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Low Tech and High Tech: The Spectrum of Special Collections Use in a Technological Institute

Anne A. Salter and Marilyn Williamson

The gradual expansion of the Georgia Institute of Technology 's Library and Special Collection has resulted in a unique and outstanding science and technological research facility. The process was expanded by a number of individuals who dedicated their professional years to improving the holdings. Unique among these treasures is the first edition of Newton's *Principia*. Collecting, preserving, and utilizing the new technologies to expand access to this outstanding collection has proved challenging. The primary materials, carefully collected over the years, are being protected and made available through traditional means; while at the same time technological advances are being utilized to enhance access to the intellectual and visual content of these materials

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condition of passing the courses.¹ From such humble but practical beginnings, the Georgia Tech Library grew quickly. For a number of years the emphasis was on building a working collection of textbooks and reference sources in the engineering disciplines. There was neither money nor a perceived need for rare and special materials.

The Beginnings of Georgia Tech

Following the Civil War and Reconstruction, farsighted individuals in the Southern United States realized that the South must develop industry in order to gain a foothold in the modern United States. The founding of the Georgia School of Technology (now the Georgia Institute of Technology, or Georgia Tech) grew directly from this realization. After many financial and political skirmishes and setbacks, the Georgia School of Technology was finally approved in October 1885. The first department to be founded was Mechanical Engineering. Civil Engineering and Electrical Engineering Departments were founded in 1896 and the Textile Department in 1899. A Bachelor of Science degree was offered in all four areas. The earliest focus on trades soon gave way to an emphasis on engineering.

The Origin and Early Growth of the Special Collections

Georgia Tech's first library was a bookshelf in the English professor's office. It was not until April 1899 that a room in the Administration Building was set aside for use as a library. Funding for library materials was slow in coming, and facetious campus lore had it that the English professor made student donation of books a

Dorothy Crosland was Georgia Tech's librarian for nearly half a century (1927-1971). It was not until the 1950s that she first broached the subject of rare books. In her annual report for 1957/1958, she stated: "The acquisitions policy of the Director of Libraries has never been to purchase rare books. So much material has been needed for the instructional program, graduate work, and research that it seemed much more important to try and supply these needs. However, the time has come when a few rare items would be valuable for display purposes and also for use of the faculty who teach the literature of chemistry, mathematics, or physics."²

In the spring of 1958, donations from friends made it possible to purchase the Georgia Tech Library's first rare book. This was a copy of a first issue of the first edition of Sir Isaac Newton's *Philosophiae Naturalis Principia Mathematica* (London, 1687), bound with a copy

¹ Wallace, Robert B., Jr. *Dress Her in White and Gold: A Biography of Georgia Tech and of the Men Who Led Her*, Rev. ed. (Atlanta: The Georgia Tech Foundation, Inc., 1969), p.38.

² Georgia Institute of Technology. Library. *Annual Report, 1957-1958*. Submitted by the Director to the President, July 1958, p. 7.

of a printed tract by Edmund Halley. The book has been exhibited on several occasions through the years, and it remains one of the most important treasures of this library. It can be regarded as the cornerstone of the Georgia Tech Library's significant collection in the history of science and technology.

The next noteworthy rare book acquisition occurred in 1965, again under the longtime director's guidance. With funds from a bequest, the library was able to acquire a nine-volume set of Joan Blaeu's *Grooten Atlas* (Amsterdam, 1664-1665) in Dutch. This sumptuous cartographic achievement has been greatly admired throughout the years, and the volumes have been exhibited from time to time. Although not specifically documents in the history of science, these volumes serve as a starting point for research in many aspects of history and culture.

Expansion of Special Collections, 1971-2000

Acquisition of rare materials was not actively pursued during the 1970s and 1980s, partly because the library's budget had become more restricted. The administration returned to the policy of concentrating on current materials to support the curriculum and research of the institution. However, a few rare books came to the library as gifts from faculty members. The most notable of these gifts was a copy of the 3rd edition of Newton's *Philosophiae Naturalis Principia Mathematica* (London: Printed by William Bowyer for G. & J. Innys, 1726), presented to the library by a respected faculty member. This was the last edition of the *Principia* to be published during Newton's lifetime and it greatly enhanced the growing collection of Newtoniana at Georgia Tech.

During the 1990s the administration once again began to acquire some rare books, mostly with endowment funds. In addition, budgets for resources became more generous, and it was possible to enrich the collections with some fine early editions of seminal works in selected areas of the history of science and technology. The library was able to complete its collection of the first three editions of the *Principia* in 1999 with the purchase of the 2nd edition of Sir Isaac Newton's *Philosophiae Naturalis Principia Mathematica*, revised and edited by Roger Cotes and published by Richard Bentley, Master of Trinity College (Cambridge: University Press, 1713). The 2nd edition differs considerably from

the 1st edition, and only 750 copies were printed in 1713, making this an important edition.

In addition to these three early editions of the *Principia*, additional works of Newton have recently been acquired for the collection, among them *Opticks: or a Treatise of the Reflexions, Refractions, Inflexions and Colours of Light* (London: Printed for Sam Smith and Benjamin Walford, 1704); the first English edition of the *Universal Arithmetick, or A Treatise of Arithmetical Composition and Resolution* (London, 1720); and many later editions of various works by Newton, in several languages. Taken together, the important early editions of the works of Newton comprise a core collection of significance in the history of science and technology. This core collection has been expanded over the years into mathematics, early technology, and even astronomy—all of which are important areas for the enrichment of education at an engineering institution.

Through periodic collection review, it has been possible for librarians to identify existing materials of increasing rarity on the open shelves and to target them for protected shelving in the special collection area. In particular, twentieth century works in both the monographic and periodical literature on the history of science and technology have been moved from the open shelves. An example of such material is a nearly complete set of the *Massachusetts Institute of Technology Radiation Laboratory Reports* from the World War II era. These mimeographed and typewritten reports contain important information about the development of radar. Bound volumes of periodicals before 1976 are already stored on closed compact shelving adjacent to the Archives Department, and this provides good security for important papers without necessitating separate locations for volumes containing papers which have become rare and valuable.

In addition to its holdings in the history of science and technology, the Georgia Tech Library has recently received an important collection of early science fiction, a very popular genre at this institution. This acquisition will form the nucleus of a special named collection, and its presence here has already been influential in the decision of a major science fiction writer to place copies of all his works in

the this library. These works will also be included in the special science fiction collection.

[Storage of the Special Collections](#)

In 1996 the Georgia Tech Library and Information Center completed a renovation of the Archives Department. The new space includes a reading room, offices, lab, photocopy room, and a state of the art closed stacks area. The closed stacks area includes compact shelving, environment control, a fire suppression system, and security. The compact shelving was designed and installed by Spacesaver. Although the archival storage area is located on ground level, a raised plywood platform had to be installed in order for the shelves to operate properly. The platform was covered with linoleum. Electronic shelving was selected rather than the manual option.

A Liebert Challenger 3000 unit controls the environment. Because the archives houses mixed collections including papers, books bound in vellum, photographs, slides, works of art on paper, three-dimensional items made of various ores, videos, films, and tapes, the room is kept at a temperature of 68 degrees Fahrenheit and at a relative humidity of 35%. The closed stacks area is also well protected from fire and theft. The fire suppression system is a Kidde FM-200. This system is automatic and heat activated. In the event of fire, the room would lock down and the fire suppression chemical would be released. An alarm system and a card reader that allows entry only for archives staff and key library personnel also protect the closed stacks room.

Special Collections contains a wealth of materials ranging from vellum bound books to three-dimensional objects. University publications, theses and dissertations, reports of sponsored research, rare books, and copies of publications by Georgia Tech faculty comprise a large portion of the collection. The manuscript collection and the Institute archives complete the collection in the closed stacks. The location of the storage area adjacent to the reading room and to the staff offices makes the contents readily accessible to students and faculty and affords excellent security for the materials.

[Traditional and Newer Uses of the Special Collections](#)

Students and faculty make use of the special collections for a wide variety of purposes.

Traditionally, students request use of archival materials on a regular basis. Faculty assignments often include use of archival materials for projects, and students frequently seek documentation of campus buildings. In addition, classes visit the archives for tours and for an introduction to the research potential of special collections for various projects.

Tech's Newtoniana collection has also inspired less traditional uses of special collections materials. The Physics Department requests the viewing of early editions of Newton's *Principia* on an annual basis, and the staff is happy to comply with the request. Working out the logistics of moving the books safely across campus and ensuring their continued security while being viewed are only two of the challenges. While students gather around the books resting on large foam book cradles, the archivist turns the pages carefully with a bone folder, while another staff member provides a brief talk on the provenance and acquisition of the books. Rewards for the staff are great as the undergraduates, normally engulfed in high technology, stand spellbound in front of these rare books.

Non-traditional use of special collections material is usually audience driven. However, the use of high technology to provide access to collections via the Web allows the focus to be program oriented. Digitizing special collections materials allows access to facsimiles of original materials that otherwise would not be available on such an on-call basis. Digitizing is not a replacement for preservation, nor is it a replacement for proper archival cataloging. It is, however, an excellent method for providing access. Above all, it allows new ways of manipulating materials to be developed into useful programs that an "invisible audience" may effectively utilize. The traditional archivist's way of viewing collections has changed both physically and philosophically. The concept of the archives as the final, and often static, resting place of originals disappears in light of the new and improved access to materials via technology.

Georgia Tech Library and Information Center staff have designed and implemented a number of Web-based collections in order to provide improved access to its special collections. The criteria for selecting the materials to be digitized include their uniqueness, condition, and

usefulness to the campus. Extensive metadata tracks information on the original item and the digital version. Currently, several Web sites exist that showcase special collections materials using a variety of creative and innovative means, and more sites are planned. Three existing Websites feature the historic buildings of Georgia Tech, the Griffin Photo Collection, and John Lodge Cowley's book entitled *An Illustration and Mensuration of Solid Geometry* (3rd ed., London, printed by S. Cosnell...for the editor, 1787).³ Each of these projects presented different challenges as staff attempted to improve access to unique materials. Architectural drawings, vintage Georgia Tech publications, photographs, color drawings, oversize graphics, and three-dimensional figures were utilized in the Web design, and each format provided a unique opportunity for experimentation.

"A Thousand Wheels are Set in Motion," the historic buildings Web site, was developed through the combined efforts of a number of library and archives personnel, and it was created in order to continue providing the campus community with a flow of information on its historic buildings. Working as a team, faculty members and staff from acquisitions, archives, cataloging, and systems collaborated, each individual contributing time and special expertise. Resources used in this project included vintage bulletins, oversize architectural drawings, historic photographs, and original text. Cataloging staff provided the descriptions, systems staff designed the site and scanned the materials, and acquisitions and archives staff prepared articles and bibliographies.

"George Griffin Photograph Collection" is a Web site funded by a grant from the Beck Foundation. This collection, named for a beloved dean, is a unique and wide-ranging assortment of primarily black and white photographs and negatives documenting the history of Georgia Tech, with a special emphasis on sports. The Web site provides easy access for viewing photos in several sizes and information on their condition and creation.

³ All three sites are accessible through the link on the Georgia Tech Archives and Records Management page the www.library.gatech.edu/archives.

The Web site entitled "An Illustration and Mensuration of Solid Geometry" features a recently acquired rare eighteenth century work which is a "pop-up" book containing many three-dimensional figures illustrating solid geometry. These shapes can be folded and allowed to stand up on the page. The challenge in scanning and digitizing such figures was considerable, as prevention of damage to the book was of paramount importance. The innovative solution to the challenge proved to be recreating the pop-up figures without actually folding the originals. First, the book was examined by staff at the Institute of Paper Science and Technology who took the weight of the paper. Then the plats were scanned, printed on paper of identical weight, and finally recreated as the "pop-up" figures. The resulting Web site provides accurate images of the "pop-ups," views of the original text, and an essay establishing the context for the author's work.

[Toward the Future](#)

These Web sites and the digitization of the images found on them provide the foundation for a larger program that will scan materials and make digital images available. Metadata records have been constructed and are used in conjunction with the digital materials. These records document fully and carefully these Web based collections for future users. Metadata, information about data or information that manages data, provides a Web-based resource to describe and provide key information for the creation, retention, duplication and use of Web-based materials. The metadata record is important in providing information that will assist in future migrations of materials to new formats. Metadata, which follows a set of standards and schema, is essential to the ongoing life cycle of Web-based materials. A sound archival digital program must include a robust metadata record in order to validate the efforts that created the site, provide key information on rights and use of materials, and allow for future migration.

[Conclusion](#)

The Georgia Tech Library's collection of rare materials has been developed with painstaking care over nearly half a century. The cornerstone work of the collection is the first rare volume acquired, the first edition of Newton's *Principia*. That acquisition set the direction for the collection in the history of science and technology. With few but important exceptions, this has remained the collecting focus to this

day. Through judicious purchases, generous gifts, and perusal of the open collection for important works deserving protection, the library has assembled an excellent focused group of materials. At the same time, technological advances are being fully utilized to enhance

access to the intellectual and visual content of these materials. The special collections are receiving increasing use and are regarded by faculty as an important resource in engineering education.